thermoplastic resin composition and has a flexural modulus according to ASTM D790 of not more than 5,000 kg/cm^2, and the ratio of flexural modulus of the layer A to flexural modulus of the layer B is not less than 5.

REMARKS

Claims 1-6 are pending in the subject application. Claim 1 has been amended for clarification purposes. Support for the amendment to claim 1 is found throughout the Specification, as filed, and no new matter is presented by the amendment.

Applicants also submit herewith, for consideration, a Declaration under 37 C.F.R. 1.132, by inventor Kiyoji Takagi.

Favorable reconsideration in light of the amendments, remarks which follow and Declaration under 37 C.F.R. 1.132 is respectfully requested.

1. 35 U.S.C. §112 Rejections

Claim 1 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office states:

> Claim 1, line 1, the phrase "at least two of a layer A and a layer B" should read ---two layers A and one layer B-- for clarity.

Applicants respectfully submit that the amendments made herein overcome or render moot the 35 U.S.C. §112, second paragraph rejections. Reconsideration and withdrawal of the rejections is respectfully requested.

2. 35 U.S.C. §102/103 Rejections

Claims 1-6 have been rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Yamada et al (U.S. Patent 4,842,951). The Office states:

> Yamada et al disclose a thermoforming laminate comprising two layers (25) made of polypropylene and two adhesive layers (24) made of a maleic anhydride modified

> polypropylene (Example 1). The thickness of laminate is 0.8 mm (Example 1). The thickness of layers (25) is 50-200 microns (col. 4, lines 44-45) and the thickness of adhesive layers (24) is 5-60 microns (col. 4, line 63). Thus, when calculated would fall within claimed range. Since Yamada et al's polyphenylene is a homopolymer similar to the polypropylene homopolymer disclosed in the instant invention, claimed modulus for layers A deemed to be inherent. Adhesive layer forming material such as ethylene-vinyl acetate copolymer, polyolefin resins modified with unsaturated carboxylic acid (col. 4, liens 3-20). This adhesive layer encompasses claimed resin forming layer B. Therefore, modified polyolefin deemed to have claimed modulus of layer B. In an event it is not there, a person of ordinary skill in the art at the time of this invention made would have found it obvious to optimize physical properties of each layers and of laminate for desired application.

Applicants respectfully traverse this rejection.

Applicants teach multilayered moldings having an improved balance of properties such as low-temperature impact resistance, rigidity, dimensional stability and heat resistance. In particular, Applicants' multlayered moldings comprising at least two layers A and one layer B. Layers A are formed on both sides of layer B, and each layer A comprises a same or different thermoplastic resin composition. Layers A have a flexural modulus according to ASTM D790 of not less than 5,000 kg/cm^2, and layer B comprises a thermoplastic resin composition having a flexural modulus according to ASTM D790 of not more than 5,000 kg/cm^2. Further, the ratio of flexural modulus of layers A to the flexural modulus of layer B is not less than 5.

The flexural modulus of layers A and B and the relative flexural modulus of layers A to layer B is important as demonstrated by comparing Example 8 and Comparative Example 1 (see below and see also Table 2 in the Specification)

	EXAMPLE 8	COMPARATIVE EXAMPLE 1
Layer A1		
PPE	40	40
PA6	60	60
SBS	5	5
mEPR	5	5
MA	0.5	0.5
Talc	18	18
Layer A2		
mPA		100
Layer B1		
PA12	100	
Layer constitution and layer thickness (mm)	A1 0.4 B1 0.2 A1 1.4	A1 0.4 A2 0.2 A1 1.4
Flexural modulus (kg/cm^2)		
A1	35000	35000
B1	1500	
A2		8500
Ratio		
(A1/B1)	23	
(A1/A2)		4
Low-temperature impact strength	◎	X
Rigidity (kg/cm^2)	32000	32000
Linear expansion coefficient ($10^{-6}/K$)	8	8

◎ : no scattering and separation was observed in any of the 10 samples

X : scattering and separation was observed in 5 to 9 samples

In Example 8, PA12 having a flexural modulus of 1500 kg/cm^2 (not more than 5000 kg/cm^2) was used as the core layer. In Comparative Example 1, mPA having a flexural modulus of 8500 kg/cm^2 (more than 5000 kg/cm^2) was used as the core layer. Namely, the only difference in Example 8 and Comparative Example 1 is the core layer. As clearly demonstrated above (see also Table 1 in the Specification), the low-temperature impact strength of multilayered molding of Example 8 is far superior to that of Comparative Example 1. Therefore, when only the flexural modulus of the core layer is changed in accordance with the present invention, the low-temperature impact strength is drastically improved. This is an unexpected result.

The Yamada reference describes a thermoformable resin laminate sheet comprising: (a) a gas permeation-resistant resin layer and (b) a polyolefin based resin layer laminated on each side of the gas permeation-resistant resin layer containing 35-70% by weight of at least one inorganic filler. The resin laminate may further include, on its outer surface, a thermoplastic resin layer free from inorganic filler. According to Yamada, the inorganic filler is selected from talc and calcium carbonate and the resin is selected from polypropylene resin, a mixture of a polypropylene resin and an ethylene-propylene elastomer, and a mixture of a polypropylene resin and a polyethylene resin. The thermoforming resin laminate sheets described by Yamada are used to make containers low in permeability to gas such as oxygen gas and superior in moisture resistance, heat resistance, strength, stiffness and the like.

Applicants respectfully disagree with the Office's assertion that

> Since Yamada et al's polyphenylene is a homopolymer similar to the polypropylene homopolymer disclosed in the instant invention, claimed modulus for layers A deemed to be inherent. Adhesive layer forming material such as ethylene-vinyl acetate copolymer, polyolefin resins modified with unsaturated carboxylic acid (col. 4, liens 3-20). This adhesive layer encompasses claimed resin forming layer B.

The Yamada reference does not describe or otherwise suggest a multilayered molding wherein the layers A have a flexural modulus according to ASTM D790 of not less than 5,000 kg/cm^2 and the layer B has a flexural modulus according to ASTM

D790 of not more than 5,000 kg/cm^2, and, further, wherein the ratio of flexural modulus of the layer A to flexural modulus of the layer B is not less than 5.

Further, Applicants respectfully submit that these properties are not inherent in the Yamada reference. It is well settled that "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy,* 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *In re Robertson,* 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)

A multilayered molding wherein (1) layers A have a flexural modulus according to ASTM D790 of not less than 5,000 kg/cm^2, (2) layer B has a flexural modulus according to ASTM D790 of not more than 5,000 kg/cm^2, and (3) the ratio of flexural modulus of the layer A to flexural modulus of the layer B is not less than 5 does not necessarily flow from the teachings of the Yamada reference.

Rather, in the Yamada reference, in Example 1 an ethylene-vinyl alcohol copolymer (Eval EP-F101 by Kuralay Co., Ltd, which is equal to Eval F101) was used as the adhesive layer (layer B). In Example 2, an ethylene-vinyl alcohol copolymer (Soanol ET by Nipon Gosei Kagaku K.K.) was used as the adhesive layer (layer B). Applicants enclose herewith a catalogue by Kuraray Co., Ltd obtained from their website (http://www.eval.jp/products/index.html) with English partial translation. As clearly shown, the ethylene-vinyl alcohol copolymer used in Example 1 has a flexural modulus of 36,000 kg/cm^2 measured by ASTM D790. This is not within the scope of the present invention (layer B has a flexural modulus of not more than 5,000 kg/cm^2). Further, as clearly shown, the ethylene-vinyl alcohol copolymer used in Example 2 has a flexural modulus of 40,5000 kg/cm^2 measured by ASTM D790, which is also not within the scope of the present invention (layer B has a flexural modulus of not more than 5,000 kg/cm^2).

Thus, this is concrete evidence that the properties set forth in Applicants' claim 1 do not necessarily flow from the teachings of the Yamada reference. Accordingly, these properties are not inherent.

Furthermore, Applicants respectfully disagree with the Office's assertion that "In an event it [*modulus of layer B*] is not there, a person of ordinary skill in the art at the time of this invention made would have found it obvious to optimize physical properties of each layers and of laminate for desired application."

It is well settled that "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation." *In re Antonie,* 559 F.2d 618, 195 USPQ 6 (CCPA 1977); MPEP §2144.05.

The flexural modulus of the layers forming the multilayered moldings is not recognized as being a result-effective variable nor is the ratio of the flexural modulus of layers A to layer B. Thus, Applicants respectfully submit that the determination of the parameters taught by Applicant can not be characterized as routine experimentation.

Still further, the Yamada reference does not describe low-temperature impact strength of its multilayered moldings nor does it provide any motivation or suggestion to improve low-temperature impact strength of its multilayered moldings.

Accordingly, claim 1 is patentable over Yamada et al. Claims 2-6 depend from claim 1 and, likewise, are patentable over Yamada et al.

CONCLUSION

Reconsideration and allowance of claims 1-6 is respectfully requested in view of the foregoing discussion. This case is believed to be in condition for immediate

allowance. Applicant respectfully requests early consideration and allowance of the subject application.

Applicants conditionally petition for an extension of time to provide for the possibility that such a petition has been inadvertently overlooked and is required. As provided below charge Deposit Account No. **04-1105** for any required fee.

Should the Examiner wish to discuss any of the amendments and/or remarks made herein, the undersigned attorney would appreciate the opportunity to do so.

Respectfully submitted,

Date: 2/28/03

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VERSION WITH MARKINGS TO SHOW CHANGES MADE IN CLAIMS

Please note that additions to the claims are shown underlined and deletions are shown in brackets.

1. A multilayered molding comprising at least two [of a] layers A and [a] one layer B, in which the layers A are formed on both sides of the layer B, each layer A comprises a same or different thermoplastic resin compositions, the layer A has a flexural modulus according to ASTM D790 of not less than 5,000 kg/cm^2, the layer B comprises a thermoplastic resin composition and has a flexural modulus according to ASTM D790 of not more than 5,000 kg/cm^2, and the ratio of flexural modulus of the layer A to flexural modulus of the layer B is not less than 5.

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